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ABSTRACT

This paper celebrates UNESCO's announcement of the re-establishment of the Alexandrian Library, citing the incentive the project provides to review the history of the famed library of antiquity, of the librarians who served it, and of the scholars who used it. After a brief history of the city of Alexandria, including its founding by Alexander, the rule of Ptolemy Soter, and Ptolemy's recruitment of intellectuals, the paper describes the establishment of the library and museum by Ptolemy Soter, his son Ptolemy Philadelphus, and Demetrius of Phalerum. The paper then details the history, sponsorship, and goals of the library, which collected, edited, and preserved classical literature and contributed to almost every important scientific discovery of the period. The paper discusses the library's organization and activity, and the contributions of its librarians. Finally, the paper describes the maturity and gradual decline of the library, its uncertain fate, and its remaining legacy, asserting that the library's influence on succeeding generations was unparalleled. (Twenty-three references are attached.) (PRA)

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The Alexandrian Library of Antiquity

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Abstract

UNESCO's announcement of the re-establishment of the Alexandrian Library provides an incentive to review the history of and contributions made by scholars at the famed library of antiquity. The original library flourished during the third and second centuries BC, and survived until about 400 A.D. During that time the Library collected, edited and preserved classical literature and contributed to almost every important scientific discovery of the period. Its influence on succeeding generations is unparalleled.

Alexandrian Library of Antiquity

Cleopatra was not the only one. Many of history's most eminent figures passed through the portals of the renowned Library of Alexandria. Cleopatra, a library patron in two senses of the word, was both a benefactor and a user--but not always a protector. Caesar and Mark Antony also influenced the history of this remarkable collection, for worse and/or for better. Demetrious of Phalerum, Erastosthenes, Euclid, Archimedes, Callimachus, Aristarchus of Samothrace, and Aristophanes were only a few of the revered scholars who utilized the resources of the Alexandrian Library in developing ideas which changed the world.

It was one of the most influential institutions of all time and lasted between seven hundred and a thousand years, but even the most dedicated researchers have been unable to concur on many facts concerning the Alexandrian Library of Antiquity. Writers disagree as to where the library was located (or libraries--there were two, a "mother library" and a "daughter library"), what it was like, how many librarians served, what their names were, what contributions they made, which time periods they functioned, along with a number of other pertinent topics. About the only point upon which strict consensus exists is the importance of the library and the rich influence it has had on succeeding generations.

Since the announcement that UNESCO would sponsor a program to support the re-establishment of the Alexandrian Library, renewed interest, even excitement has begun to build. On October 22, 1987, an appeal was made for worldwide solidarity in support of this significant project. "This library that we are rebuilding today is much more than a monument of stone, it is a proclamation that the most precious creation of humanity is the printed word," said Unesco's

Director General, Federico Mayor, at the laying of the foundation stone on June 26th, 1988. "For the book bridges both time and space, binding us together in a unity that transcends language and land" (Williams, 1989 p. 16).

But even as the creation of a beautiful new Library is welcomed, reflection on the history and the unique contributions of the original Alexandrian Library of Antiquity is appropriate.

Alexander the Great

In the year 332 BC, Egypt was invaded by the armies of Alexander the Great. Most of the Egyptians, weary of life under their Persian taskmasters, viewed Alexander more as a liberator than a conqueror, so little resistance was offered. Through the centuries Egypt had been repeatedly invaded, but always they had eventually returned to the ways of the Pharaohs. There was no way for them to know that this time would be different, that at least a part of Egypt would be entering a golden age--golden, that is for the Greeks, but not necessarily for the Egyptians. Never again, in the foreseeable future, would Egypt be ruled by Egyptians (Bevan, 1968).

Many of the changes which occurred when Alexander's armies occupied Egypt were positive ones (Bevan, 1968). Alexander believed it possible for victor and vanquished to live together in peace and harmony (Marlowe, 1971). He had a noble idea with three facets: first, his belief that God is the common Father of mankind, hence the brotherhood of man; second, his vision of the various races of mankind living in peace and harmony, which may be called the unity of mankind; and third, his dream that the various peoples of his Empire might be partners in the realm rather than subjects (Tarn, 1948,). He dreamed of a Hellenized world in which a Greek spiritual unity would exist among all the conquered peoples, taking into account the individual characteristics of each

region and showing due regard for ethnic institutions and religious traditions (Wright, 1979).

> Alexander, was educated in every way as befitted a future king; the learned Aristotle was his tutor, and his wide interests are demonstrated by the inclusion of historians, artists and scientists of all sorts in the circle of men closest to him during his conquests. Alexander did not merely wish to conquer, but also to understand and record what he found" (Arrian, 1981, pp. 3-4).

In contrast to the actions of earlier conquerors and true to his avowed beliefs, Alexander paid immediate respect to the gods of Egypt and, soon after his arrival, undertook an arduous journey to the Siwah Oasis to seek the blessings of the greatest of the Egyptian Gods--Ammon (Zeus). Alexander's efforts were blessed by the god's acknowledgement of him (through the offices of the priest, who spoke for the oracle) as a literal son of Ammon, which greatly enhanced his acceptance by the Egyptians.

Alexander's stay in Egypt was brief, and probably his most important and enduring act was the founding of Alexandria, destined to become one of the most influential cities in the history of the world. On January 20th, 331 BC, when Alexander first beheld the small Egyptian settlement of Rhakotis on the Mediterranean coast, he decreed that here would be built a splendid city that would be worthy of his name (Parsons, 1952).

According to legend, Alexander traced the boundaries of the city with barley-meal from his soldiers' packs, indicating at the same time the locations for future temples and public buildings. The interpreters of omens considered this a fortuitous sign (Arrian, 1981). Alexander instructed Dinocrates, the architect who had accompanied him on the Egyptian expedition, to draw plans for the magnificent city he envisioned. "And so by fiat the amazing son of Philip

founded Alexandria, which he himself was never to see, although his body, and we hope his spirit, became for at least seven centuries the divine guardian of its imperial splendors" (Parsons, 1952, p. 54).

By the spring of 331 BC, when Alexander left Egypt to attack the Persian king at Mesopotamia, Egypt was solidly organized as a province of the new Macedonian empire, and Alexandria, his city, was well on its destined way to greatness.

Ptolemy Soter

Upon the death of Alexander the Great in Babylon in 323 BC, his generals began a power struggle to establish territories of influence. Ptolemy, son of Lagus, took over as satrap of Egypt. One of his first acts, and a brilliant one, was to secure the body of Alexander to rest in his Egyptian namesake city. Another ingenious move was the establishment of a new cult incorporating both Greek and Egyptian religious rites in worshiping a multicultural god, Serapis. The Serapeum, called by some the second most magnificent building of the ancient world, was built to house this new god (Parsons, 1952).

This same Ptolemy, later known as Soter (savior), had been a loyal companion of Alexander's youth and was doubtlessly familiar with the teachings of Aristotle. He was sympathetic with Alexander's dreams, especially since many of them fit well with his own ambitions. From the beginning, he encouraged Greek settlement in Alexandria and jealously courted talented citizens from conquered territories. But political and military problems weighed heavily upon him for the first years of his reign, and it wasn't until about 305 BC that he was able to actively pursue the dreams he had earlier shared with his chief.

Ptolemy had proven himself as a military leader and was likewise successful as a diplomat and statesman. In a few short years Alexandria, as a

center of world trade, had amassed great wealth and become a recognized seat of power and influence. Ptolemy now had the authority and the resources to seek the fulfillment of his own dream. He seemed to sense that Alexandria had potential for lasting greatness not only in the area of commerce but in the intellectual life of the Greek city states and of the entire world (Parsons, 1952).

Alexandria, as a new city had no native intellectuals, in fact no real natives at all except the Egyptian inhabitants of the small fishing village which it had replaced. Ptolemy was not interested in Egyptian ideas or culture. His city was to be Hellenistic from the foundation up.

Ptolemy had recruited soldiers, merchants, tradesmen and government officials from throughout the Mediterranean world, with an irresistible call that promised a new life in an ancient land with all things that men could desire (Parsons, 1952). Fortunately, the call was answered by, among thousands of others, the one man who would prove a key figure in the greatest of Ptolemy's achievements. This man was Demetrius of Phalerum.

Demetrius was an unusual man with a wealth of experience. He had been a pupil of Theophrastus and a follower of Aristotle. He was a scholar and a man of the world: a philosopher and a politician. He had enjoyed great power and had lived in luxury, but he had also tasted defeat and had lived in poverty (Parsons, 1952).

Most importantly, Demetrius was a man Ptolemy liked and trusted. They shared the same intellectual tastes and grand desire: both dreamed of a museum (house of the muses) where they could mingle with wise and learned men; both were ambitious, persistent, and focused. Both had every intention of building a library to serve their group of scholars--a library with a modest collection consisting of all the books in the world.

Establishment of the Library and Museum

Scholars disagree as to the parts played by Ptolemy Soter, his son Ptolemy Philadelphus, and Demetrius of Phalerum in the creation of the Library at Alexandria. Actually the existence of two libraries, "the mother library" located in or near the Museum, and "a daughter library" housed in the Serapeum, serves to complicate matters. Pfeiffer (1968, p. 98-99) quotes Eusebus: "Ptolemy the son of Lagus having the ambition to equip the library, established by him in Alexandria, with the writings of all men as far as they were worth serious attention, etc." Fraser (1972, p. 321-322) believes that there is "little reason to doubt that the idea, and first stages of planning of the Library, as of the Mouseion, were due to Soter, whose work in this as in other respects seems to have been overshadowed, deliberately or otherwise, by that of his magnificent son."

On the other hand, after diligent analysis of many early writings, Parsons (1952, p. 104) concludes that Demetrius of Phalerum deserves to be called the founder, "in the dynamic age of the new Hellenism, the vast wealth of Egypt and the power of Ptolemy (Soter) soon converted the plans of Demetrious of Phaleron into two institutions that lasted for nearly seven hundred or a thousand years."

Parsons (1952), Marlowe (1971) and Holmes (1980) represent scholars who believe that Greek influence, represented by Demetrius' connection with Aristotle, Theophrastus, etc., was paramount in the establishment of the Museum and Library, but Wright (1979) offers convincing evidence that Asian influences also played an important part. He suggests that Alexander's campaigns in the Orient gave Ptolemy ample opportunity to observe the highly developed libraries and the high literacy rate in that part of the world. He also gives Ptolemy Soter, rather than Demetrius, primary credit for the initial ideas and plans.

Pffeifer (1968), who credits Ptolemy I with the establishment of the "royal" or "mother library" explains that, based on the word of Tzetzes, Ptolemy II Philadelphus was long regarded as the founder of a second or "daughter library" which was supposedly located in the Serapeum in the Rhakotis (or Egyptian) district of the city. However, excavations made in 1945 turned up the foundation tablets of the Serapeum which bore the name of his son Ptolemy III Euergetes. Although Euergetes is now considered the founder of the new temple, it is still unclear whether he or his father set up the new library.

Euergetes is best remembered for his reputed arrangement to borrow from Athens the official copies of the tragedies of Aeschylus, Sophocles and Euripides for copying purposes. The Athenians prudently insisted that he deposit some fifteen talents (roughly equivalent to four million dollars) to ensure the return of the manuscripts. Wily Euergetes kept the originals, returned the copies and cheerfully forfeited the deposit (Casson, 1985).

Euergetes was also said to have ordered the confiscation of all books arriving on ships in Alexandria. These books were copied; the copies were returned to the owners and the originals added to the growing collection of the Alexandrina. Euergetes' son, Ptolemy IV Philopater, unfortunately did not inherit the abilities and virtues of his predecessors. His reign marked the beginning of the decline of the Egyptian kingdom.

> But be it to the credit of the Alexandrian dynasty that the first Ptolemy and his two successors assembled in their library the whole of literary heritage, the main currents of philosophical thought and the entire knowledge of the Greek world, and that they entrusted it to men who were worthy of managing such a library, while welcoming others who were capable of using it. (Bingen, 1988, p. 45)

Later Ptolemies continued their interest in the Museum and Library. But, through the years, intermarriage between brothers and sisters of the Ptolemaic dynasty caused untold trouble, not only in the areas of physical and mental health but in fierce competition for power and authority.

Perhaps the most famous of all the Ptolemies was Cleopatra VII, of whom Shakespeare said, "Age cannot wither her, nor custom stale Her infinite variety" (Allibone, 1874). In addition to her other natural charms, she reputedly spoke several languages; in fact she was the first of the Ptolemies who bothered to learn Egyptian. She was also an avid library user. Unfortunately, she sometimes "used" it for ulterior purposes. Cleopatra reportedly presented Julius Caesar, who had become her lover while in Egypt, to mediate a conflict between herself and her brother, with about forty thousand volumes which, according to legend, were subsequently burned during a skirmish between Caesar and some of Cleopatra's opponents. Fortunately, if the foregoing is true, and if the following legend is also true, Cleopatra more than made up for the depredation when, about a decade later, another lover, Mark Antony, presented her with some two hundred thousand volumes from the famous Pergamon Library, with which the Alexandrian had been fiercely competing for available manuscripts.

Ptolemaic Patronage of the Library and Scholarship

Library patronage was a common practice in Greek libraries from the time of the tyrants well into the Roman period. It flourished in Macedon under Archelaus, who supported great thinkers such as Euripides and Timotheus, and his descendant Phillip II, who sponsored such notables as Aristotle (Fraser, 1972). So the idea was not a new one to Ptolmey I. Much of his youth had been spent as a page at the court of Phillip II and his early manhood as one of several young intellectuals who served as generals in Alexander's armies. The

scholarly life appealed to him, and he in later years wrote an important history of Alexander's battles. Ptolemy's personal inclinations and his royal ambitions meshed into a strong desire to provide the resources necessary to support the advancement of learning and to create a climate conducive to creativity and scholarship.

Probably due largely to the environment in which they lived and the tutors under whom they studied (the leading scholars of the day), many of the succeeding Ptolemaic rulers were, in spite of their family problems, cultured individuals with intellectual interests and abilities. "This inherited interest in intellectual matters no doubt contributed considerably to the success of Ptolemaic patronage" (Fraser, 1972, p.311).

In earlier ages, patronage had simply been repaid with poetry, and that usually fulfilled the obligation. This tradition continued to an extent in the Hellenistic world but

> The determination of the sovereign to support learning for its own sake was of greater significance. To this end the various kings, with larger funds at their disposal than the rulers of an earlier day, established permanent foundations of learning. This development which implies a new conception both of the physical world and of the creations of the past as due objects of study, is itself a matter of considerable interest. (Fraser, 1972, p. 305)

The Museum and Library

The famous museum and library were probably located close to the palace at Alexandria. Desroches (1983, p.2) describes the library itself as "probably a long walkway or stoa, attached to the Museum and lined with small rooms where scrolls of papyrus were stored." According to Fraser (1972) recent excavations have revealed such a stoa next to the Museum.

The word museum meant literally "a temple of the muses," and the Alexandrian institution was probably modeled somewhat on the Athenian schools of philosophers, with which Demetrius had been familiar. The Peripatetic School in Athens, for example, had a museum connected, and it was there that the library of Aristotle had been preserved.

In Alexandria, the men of letters who became Fellows of the Museum received sustenance from the government and were able to study and meditate, research and write without mundane worries to interrupt their activities. It was hoped that such treatment would attract men of eminence to Alexandria from throughout the Greek world.

Very little is known as to the recruitment of established scholars who were willing to follow their intellectual pursuits at the Museum. Fraser (1972) suggests that some individuals probably received invitations while still in their home cities, but others seem to have been identified after their arrival in Alexandria. The Ptolemies apparently carefully watched and nurtured the talent in their own spheres of influence before seeking scholars from other areas.

Only about thirty scholars are thought to have lived and worked in the Museum at any one time, but it is likely that there were frequent interchanges between the Museum and other Hellenistic institutions. The Museum no doubt also welcomed eminent visiting scholars as guests for extended periods of time. It doesn't appear that the Museum had resident students, but the scholars' pupils and disciples are frequently mentioned, so it is possible they were taught outside the Museum (Marlowe, 1971). Wright (1979), however, doubts that instruction took place at all. He believes that evidence shows that the focus was on scientific research.

It is probable that the type of studies undertaken at the Museum and Library were directly influenced by the Aristotlean background of Demetrius of Phalerum. The principle studies pursued at the Museum were mathematics, medicine, astronomy and geometry and at the Library, philology and grammar. All study was based on Aristotle's precepts of observation and deduction (Marlowe, 1971).

Growth and Development of the Library

Although there is some disagreement concerning the responsibility for the initial establishment of the Museum and the Library which, according to Bevan (1968), was formed in connection with it, most scholars agree that Demetrius of Phalerum played a major role in the development of the Library collection. During the reign of Ptolemy Soter, Demetrius of Phalerum reputedly collected 200,000 manuscripts, of which 50,000 were originals and the rest copies. Unfortunately, his work was cut short when he was disgraced and exiled by Soter because of his unpalatable counsel concerning the selection of the next Ptolemy. Parsons (1952, p. 138) feels that Demetrius, whose genius and labor built the foundation of the great library, should be considered the first royal or "king's" librarian. Zenodotus, who is commonly considered the first librarian, he believes, should, at most, be considered the first "public" librarian of the Alexandrian.

Library Collection

Book collecting began with the founding of the Museum and was zealously pursued by Demetrius and wholeheartedly supported by Ptolemy I and his court of scholars. The goal was a universal collection comprehending both arts and sciences, and Demetrius's agents were hampered by neither funding problems nor geography as they combed the Greek world for manuscripts (Thompson, 1979).

In the words of Flavius Josephus (37-c. 100 A.D.):

> Demetrius Phalerius, who was library-keeper to the king, was now endeavoring, if it were possible, to gather together all the books that were in the habitable earth... And when once Ptolemy asked him how many ten thousands of books he had collected, he replied, that he had already about twenty times ten thousand; but that, in a little time he should have fifty times ten thousand. But he said he had been informed that there were man books of laws among the Jews worthy of inquiring after, and worthy of the king's library, but which, being written in characters and in a dialect of their own, will cause no small pains in getting them translated into the Greek tongue. (Josephus, 1960, p. 246)

Arrangements were later made for the acquisition and translation of the Jewish books of law to which Josephus referred. An interesting legend is told concerning seventy Jewish scholars who were reportedly brought to Alexandria for this purpose. They, it is said, were placed in separate cubicles to translate identical manuscripts; then when the completed work was compared the translations matched perfectly. Scholars are certain that the actual work took several years and was not nearly so dramatic, but the acquisition and translation of what was to be known as the Septuagint (which became the Old Testament) was, without question, one of the most important of the many contributions coming out of Alexandria.

Another significant milestone was reached during the reign of Ptolemy II, with the acquisition of a large segment of the libraries of Aristotle and Theophrastus (Thompson, 1979).

Alexandrian Librarians

As previously stated, scholars disagree as to the identity of the Alexandrian librarians, the parts they played, and the period of time during

which each served. Parsons (1952, p. 160) used Dr. Beloch's "table of librarians" who served during the first two centuries but added the name of Appollonius of Rhodes. He also appended a list of four possible later librarians as follows:

	From	To
Demetrios of Phaleron		282 B.C.
Zenodotus of Ephesus	282	c.260
Callimachus of Cyrene	c.260	c.240
Appollonius of Rhodes	c.240	c.230
Eratosthenes of Cyrene	c.230	195
Aristophanes of Byzantium	195	180
Appolonius the Eidograph	180	c160
Aristarchus of Samothrace	c.160	131
Cydas of the Spearmen		
Onesander of Cyprus		
Chaeremon of Alexandria		

Fraser (1979) feels certain only of the following librarians, some of which also served as royal tutors:

Zenodotus (tutor and librarian)

Appollonius (tutor and librarian)

Eratosthenes (not tutor)

Aristophanes of Byzantium (not tutor)

Aristarchus (tutor and librarian)

Scholars differ concerning the supposed librarianship of Demetrius and Callimachus, both of whom appeared on Dr. Beloch's list. All agree that both scholars played a vital part in the history of the Library, but Fraser and Holmes (198) feel that the evidence fails to show that either actually served

in the position of Chief Librarian. The latter two writers were also unwilling to speculate on individuals who possibly served in later years.

Library Organization and Activity

No precedents had been set for the establishment of a large national library but "two preliminary tasks," according to Irwin (1968, p. 402), "were essential: first, the compilation of an authoritative bibliography of Greek literature, and, second, the editing of the existing texts in a standard form of roll suitable for storage on a large scale."

Callimachus undertook the compilation of the bibliography, and most of the librarians and numerous other scholars were involved in the editing of the complete corpus of Greek literature.

Librarians and Their Contributions

The Formative Age - Zenodotus to Eratosthenes (Fraser, 1972)

Zenodotus of Ephesus, pupil of the poet Philitos of Cos, was the first official librarian. He held his office from the end of the reign of Ptolemy I until about 245 B.C. In addition to organizing the library and establishing operating procedures, Zenodotus worked to give cohesion to the many and varied Homeric texts that had been collected from throughout the Greek world. Bingen (1988) credits Zenodotus not only with launching Alexandrian philology but also with paving the way for the later textual criticism of the New Testament.

According to Callimachus, by the end of Zenodotus' term of service the library "contained 90,000 original rolls and 400,000 copies, as well as 42,800 rolls in an annex, or `daughter' library which had been established in the Serapeum" (Marlowe, 1971, p 69).

Although evidence has failed to show that Callimachus, the poet credited with the establishment of the elegy as a form of poetic expression, was ever

Chief Librarian, his work is included with that of the librarians as so much of his work was of inestimable value to the Alexandrian Library, and his influence extends down through the centuries to the great research libraries of today. As compiler of the famous Pinakes or (properly) the Tables of persons eminent in every branch of learning together with a list of their writings, Callimachus is widely considered the father of bibliography. The Pinakes have been called the "chief accomplishment of library technology before modern times" (Thompson, 1979, p.9).

In addition to his poetry and bibliographic work, Callimachus wrote some 800 books, many of which modern librarians would consider reference works. Some of the titles listed by Suda, include Shrine of the muses (Mouseion), The Pinakes (Alexandrian catalog), Pinax and Chronological Register of Playwrights from the Beginning, Pinax of the Vocabulary and Writings of Democritus, Names of Months by Nationality and Cities, Founding and Naming of Islands and Cities, The Rivers of Europe, Marvels and Wonders of the Peloponnesus and Italy, Names of Fishes, Winds, Birds, Rivers of the World, and Collection of Wonders of the world Topographically Arranged. To this impressive list scholars have added other works cited by ancient and medieval writers: Contests, Foreign Customs, Foreign Names, Nymphs, and something which might be called Research on Selected Topics. (Witty, 1973 p. 238)

Most writers agree that Callimachus' student, Appolonius of Rhodes, followed Zenodotus as Chief Librarian, rather than the master himself. Callimachus and Appolonius, incidentally, were involved in one of the most famous literary quarrels of all time. It seems that Appolonius, brashly failing to follow his master's example, preferred to refer back to the epic poems of Homer for his inspiration rather than to the short, polished poems advocated by Callimachus. His epic poem Argonautica was fiercely attacked by

Callimachus, when it was presented before the scholars at the Museum, and the master continued to voice and write such scathing criticism that Appolonius finally fled Alexandria for Rhodes. There, his poem was well received and, feeling vindicated, he returned a few years later to Alexandria, where he was appointed by Ptolemy Epiphanes to serve as Chief Librarian and as tutor to the royal children. Little is known of other scholarly work, but his Argonautica was admired and imitated by the Romans and is still in existence today.

Eratosthenes of Cyrene, the Chief Librarian who officially followed Appolonius, was, according to Marlowe (1971, p. 70), "perhaps the greatest, and certainly the most comprehensive of all the Alexandrian scholars." He was actively involved in both the Museum and the Library. He wrote poetry and works of historical criticism, chronology, philosophy and mathematics. He also wrote a treatise on comedy, and his work on geography served as a compendium of the geographical knowledge of the time. He invented a contraption for duplicating manuscripts; an instrument called a mesolabe for determining mean proportional between two lines and for finding roots of quantities geometrically; and 'the seive,' a mode of discovering prime numbers. He was credited with being the first to make a fairly accurate measurement of the obliquity of the elliptic, and he also made an approximately accurate measurement of a geographical degree. He probably invented what is today known as the Julian Calendar, in which an extra day (our February 29) is inserted every fourth year into the solar calendar. He was also able to calculate the diameter of the earth with an error of less than 1%.

And finally comes the classical age of Alexandria. "Aristophanes of Byzantion and Aristarchus of Samothrace ...represent the climax of Alexandrian scholarship" (Fraser, 1972). Aristophanes, considered perhaps the greatest philologer of the ancient world, is said to have been a

pupil of both Zenodotus and Callimachus and also to have worked with Machon the comic poet. This early teaching from such a variety of mentors was apparent in the remarkable scope of Aristophanes' interests, which bore fruit in a wide range of editions. Besides his edition of Homer, he edited Hesiod, Alcaeus, Anacreon, Pindar, Plato and the Greek dramatists, and wrote commentaries on Aristophanes (the Playwright) and on Callimachus' Pinakes. He also compiled word lists and introduced diacritical marks in an effort to systematize the pronunciation and accentuation of Greek (New Century, 1962 p. 162).

Aristarchus of Samothrace, like Eratosthenes, was involved with both the Museum and the Library and was one of his successors as Chief Librarian. A student of Aristophanes of Byzantium, he also served as tutor to the royal children. He founded an Aristarchean school of philology and wrote more than 800 commentaries on different authors. He is best known for his painstaking critical studies of the Iliad and the Odyssey. Both Cicero and Horace attested his name as almost proverbial as the sincere and serious critic (Pfeiffer, 1968).

But what of the Alexandrian Library/Museum contributions to the development of library science. According to Thompson (1979), the internal administration of the Museum was quite similar to the broad routines followed in large research collections today. Galen reports that new acquisitions were not sent immediately to the armaria but were first roughly arranged according to provenance. Subject specialists then arranged the rolls by content.

It was also at the Alexandria that the idea originated that research libraries have an obligation to support effective groups of scholars and that they should secure and protect copies in the best physical condition.

Large library facilities and the equipment necessary to handle large collections of papyrus roll were provided. Provisions were made to handle the

thousands of foreign scholars who visited the premises over the centuries. Technical procedures for handling the collections were developed for the first time. Callimachus developed The Pinakes to provide access to the collection, and he and other scholars provided a number of "reference tools" to help library users locate items of information (Thompson, 1979).

> From a practical standpoint, the example of the Ptolemies in providing official support on a large scale for developing significant research collections was imitated not only by lesser Hellenistic princes but also by kings, emperors, dukes and presidents for 23 centuries. (Thompson, 1979, p. 9)

Other Contributions

"I think that I shall never see
a poem as lovely as a tree..."

Joyce Killmer (Bohle, 1967, p. 417)

"There was a little girl
who had a little curl..."

William Wadsworth Longfellow (Ibid. p. 176)

"How do I love thee?
Let me count the ways..."

Elizabeth Barrett Browning (Wood, 1952, p. 126)

What possible connection could Woodworth, Longfellow, or Browning have with the Alexandrian Library?

It was the Alexandrians who developed the poetry of the ordinary, taken from nature and everyday life. And it was in Alexandria that the literature of love was conceived and first bore fruit. "Love became and has since remained, the principal subject of imaginative literature" (Marlowe, 1971 p. 98).

The Alexandrians also contributed to poetry by studying the difficulties of language and metre and by supplanting the classical conventions of metre and genre with more freedom of experimentation. Poetry became an art in itself.

The scholars and poets of Alexandria did not leave a great literature themselves, but their collection, editing, analysis and preservation of the ancient writers, in addition to the literary ideas and principles which they developed, formed a sure foundation for the masterpieces to be created by writers of later ages (Marlowe, 1971).

Music did not fare as well in Alexandria. In classical times, music had been considered a part of mathematics and an essential element in the education of a learned man. At Alexandria it was popularized and degraded into a form of erotic entertainment.

Pure science flourished, but its applied branches faltered during the Hellenistic period. Greek disdain for mechanics and their deep-seated partiality for reasoning rather than experimentation somewhat hampered the practical application and the theoretical development of physics, botany, zoology and chemistry.

Euclid was invited by Demetrius of Phaleron to work at the museum and start a school of mathematics. His major work was Elements, a compendium of existing geometrical principles. The mathematical school, which he founded, prospered for several centuries and most later developments in astronomy and mechanics were derived from its studies. His principal disciple, who probably succeeded him at the Museum, was Appolonius of Perge, after whom the famous theorem was named (Marlowe, 1971).

Hipparchus of Bithynia, one of the greatest geniuses of ancient times, completely revolutionized the study of astronomy. Although much of his work

was done in Rhodes, he also worked in Alexandria during the reign of Ptolemy VII Psychon.

Archimedes of Syracuse, the famous mathematician and inventor, while on a visit to Egypt, invented the Archimedes Screw, a method for lifting water, which is still used for irrigation.

Hero of Alexandria, who had studied with Archimedes, was an engineer who had an extraordinary grasp of the principles of hydraulics. Unfortunately, due to the tenor of the time, he seldom used his knowledge to improve life for man and beast. Educated Greeks disdained the use of machinery as frivolous since there was such an abundance of slave labor, so Hero spent much of his time perfecting marvelous contrivances which would add supernatural effects to religious ceremonies. He did, however, invent a steam boiler-driven apparatus which was the principle behind the Roman bath and central heating of today (Marlowe, 1971).

The study of medicine in Alexandria was the one science in which the Egyptians were able (or allowed) to make a vital contribution. The ancient Egyptian skill in embalming resulted in a knowledge of anatomy which significantly influenced the medical school and the practice of medicine in succeeding generations (Marlowe, 1971).

It is interesting to contemplate other significant contributions which might have been made by the Egyptians had their Greek conquerors seriously attempted to establish the spiritual unity and the respect for other cultures which Alexander had espoused.

Maturity and Gradual Decline

The third century and the early second century B.C. represent the true golden age of Alexandria, during which time the first three Ptolemies ruled a prosperous and relatively peaceful Egypt. The Museum and Library flourished as

the intelligentsia from throughout the Greek world gathered to Alexandria, the scholars' Mecca. But, beginning with the reign of Ptolemy IV Philopater, an ineffective ruler who held his throne by murdering several relatives, Alexandria gradually began to lose its intellectual ascendancy.

Intra-family strife raged through several Ptolemaic periods, culminating during the reign of Euergetes II (170-116 B.C.), who was expelled by the populace in favor of his wife. He later returned to power and exacted vengeance on Alexandria, forcing many of its scholars to escape to other Hellenistic cities. Menecles of Barca was referring to such reprisals when he said that Alexandria became the teacher of Greece through the refugees who fled from the city (Bevan, 1968).

The population which survived the persecutions of Euergetes II and the domestic squabbles of later rulers, went on to create the chaotic political life which still existed at the time of the Roman conquest in 30 B.C. (Fraser, 1972). Unfortunately, little substantiated information is available concerning the Library from the Roman period up through the conquest of the Arabs in 642 A.D.. But at least some of the collection apparently survived the various legendary catastrophes, as in the twelth century the western world recovered the major part of Greek philosophy and much of Greek science and medicine through Latin translations from the Arabic.

Uncertain Fate

The strangest aspect of the story of the Alexandrian Library is the lack of undisputed knowledge concerning its fate. Legends abound, such as the one concerning the burning of at least part of the "mother" library at the time of Caesar's visit to Cleopatra in 48 B.C., but scholars have been unable to confirm (or completely deny) such a catastrophe. It has also been said that

the Christians sacked and at least partially destroyed the "daughter" library in the Serapeum at the time Theophilus, the patriarch of Alexandria, ordered the destruction of the worship and sanctuary of Serapis in A.D. 391. (Again, definitive proof of such an occurrence is lacking.) And finally, the story is told that at the time the Arabs conquered Egypt in about 642 A.D., a certain Johannes Philoponus, the commentator on Aristotle, asked Amrou, the conqueror, for the books in the Alexandrian Library. Amrou questioned the Caliph Omar and was told that if the contents agreed with the Koran, they could be dispensed with as the Koran was more than enough. If they contained anything against what was in the Koran, there was no need to keep them. So in any case they should be destroyed. The books were then supposedly distributed among the baths of Alexandria to be burned in their stoves. The books, it is reported, provided enough fuel in the 4000 baths of Alexandria for a six month period (Sandys, 1958). Most recent scholars doubt this story. Perhaps all of the legends are at least partially true--possibly they are all completely false. Maybe truth lies with the writers who conclude that it was simply the ravages of time that sealed the fate of the Alexandrina. Unfortunately, because of the humid conditions which caused early records to deteriorate, and the fact that the present civilization was built over previous ones, the complete truth may never be known. This writer prefers to believe in the evanescence of the famed Museum and Library of Alexandria--they probably just disappeared into the mist. But, overshadowing the legends--

The Legacy Remains

> The Alexandrian school was supreme for some five hundred years, during which period almost every scientific discovery of any note was either arrived at, or recorded and developed, in Alexandria, whose scholars also, in the sciences as well as in literature, collected,

collated and preserved for posterity the discoveries already made in classical times. (Marlowe, 1971, p. 70)

The influence of the Alexandrian Library which is yet to be, like that of its magnificent predecessor which once was, can provide a legacy that will enlighten the world for generations yet to come.

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